

SEQUENCE LISTING

<110> KIM, TAE-YOON
BIO CLUE & SOLUTION CO., LT

<120> EC SOD and Cell transducing EC SOD and use thereof

<150> KR10-2003-0076629
<151> 2003-10-31

<160> 33

<170> KopatentIn 1.71

<210> 1
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<213> Artificial Sequence

<220>
<223> primer

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atgttggcct tcttgttc

18

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<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 2
ttaagtggtc ttgcactc

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<210> 3
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 3
agtctcgaga tggccctt cttgttctac ggc 33

<210> 4
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<220>
<223> primer

<400> 4
gatcctcgag tggcttgca ctcgctct 28

<210> 5
<211> 27
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<220>
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<400> 5
atctctagaa tgctggcgct actgtgt 27

<210> 6
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<220>
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<400> 6
atcgaatcct caggccgcct tgcactcgct ctct 34

<210> 7
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<400> 7

gatcctcgag tggacgggcg aggactcgcc

30

<210> 8

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 8

gatcctcgag tcaggcggcc ttgcactcgct

31

<210> 9

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 9

gatcctcgag tggacgggcg aggactcgcc

30

<210> 10

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 10

aatgctcgag tcactctgag tgctccgcgc c

31

<210> 11

<211> 240

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(240)

<223> Human EC SOD

<400> 11

Met Leu Ala Leu Leu Cys Ser Cys Leu Leu Ala Ala Gly Ala Ser

1 5 10 15

Asp Ala Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser Asp Ser Ala

20 25 30

Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile Trp Gln Glu

35 40 45

Val Met Gln Arg Arg Asp Asp Asp Gly Thr Leu His Ala Ala Cys Gln

50 55 60

Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg Val Thr Gly

65 70 75 80

Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu Asp Ala Phe

85 90 95

Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser Ser Arg Ala

100 105 110

Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys Glu Ser Thr

115 120 125

Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln His Pro Gly

130 135 140 -

Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp Arg Tyr Arg

145 150 155 160

Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile Val Gly Arg

165 170 175

Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg Gly Asn

180 185 190

Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu Ala Cys Cys

195 200 205

Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln Ala Arg Glu

210 215 220

His Ser Glu Arg Lys Lys Arg Arg Glu Ser Glu Cys Lys Ala Ala

225 230 235 240

<210> 12

<211> 231

<212> PRT

<213> Artificial Sequence

<220>

<223> TAT-EC SOD fusion protein

<400> 12
Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
1 5 10 15
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
20 25 30
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly
35 40 45
Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala
50 55 60
Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro
65 70 75 80
Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu
85 90 95
Pro Asn Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu
100 105 110
Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
115 120 125
Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
130 135 140
Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
145 150 155 160
Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
165 170 175
Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
180 185 190
Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
195 200 205
Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg
210 215 220
Glu Ser Glu Cys Lys Ala Ala
225 230

<210> 13
<211> 218
<212> PRT
<213> Artificial Sequence

<220>
<223> TAT-delta HD/EC SOD fusion protein

<400> 13
Arg Lys Lys Arg Arg Gln Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala
1 5 10 15
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys
20 25 30
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp Gly

35	40	45
Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala		
50	55	60
Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro		
65	70	75
Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu		
85	90	95
Pro Asn Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu		
100	105	110
Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val		
115	120	125
Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp		
130	135	140
Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly		
145	150	155
Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp		
165	170	175
Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala		
180	185	190
Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu		
195	200	205
Trp Glu Arg Gln Ala Arg Glu His Ser Glu		
210	215	

<210> 14
<211> 231
<212> PRT
<213> Artificial Sequence

<220>
<223> R9-EC SOD fusion protein

<400>	14	
Arg Arg Arg Arg Arg Arg Arg Arg Arg Trp Thr Gly Glu Asp Ser Ala		
1	5	10
15		
Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys		
20	25	30
Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Gly		
35	40	45
Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala		
50	55	60
Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro		
65	70	75
Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu		
85	90	95
Pro Asn Ser Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu		
100	105	110

Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val
115 120 125
Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp
130 135 140
Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly
145 150 155 160
Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp
165 170 175
Asp Leu Gly Arg Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala
180 185 190
Gly Arg Arg Leu Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu
195 200 205
Trp Glu Arg Gln Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg
210 215 220
Glu Ser Glu Cys Lys Ala Ala
225 230

<210> 15
<211> 232
<212> PRT
<213> Artificial Sequence

<220>
<223> K10-EC SOD fusion protein

<400> 15
Lys Lys Lys Lys Lys Lys Lys Lys Lys Trp Thr Gly Glu Asp Ser
1 5 10 15
Ala Glu Pro Asn Ser Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala
20 25 30
Lys Val Thr Glu Ile Trp Gln Glu Val Met Gln Arg Arg Asp Asp Asp
35 40 45
Gly Thr Leu His Ala Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp
50 55 60
Ala Ala Gln Pro Arg Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala
65 70 75 80
Pro Arg Ala Lys Leu Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr
85 90 95
Glu Pro Asn Ser Ser Arg Ala Ile His Val His Gln Phe Gly Asp
100 105 110
Leu Ser Gln Gly Cys Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala
115 120 125
Val Pro His Pro Gln His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg
130 135 140
Asp Gly Ser Leu Trp Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala
145 150 155 160
Gly Pro His Ser Ile Val Gly Arg Ala Val Val Val His Ala Gly Glu

165	170	175													
Asp	Asp	Leu	Gly	Arg	Gly	Gly	Asn	Gln	Ala	Ser	Val	Glu	Asn	Gly	Asn
180	185	190													
Ala	Gly	Arg	Arg	Leu	Ala	Cys	Cys	Val	Val	Gly	Val	Cys	Gly	Pro	Gly
195	200	205													
Leu	Trp	Glu	Arg	Gln	Ala	Arg	Glu	His	Ser	Glu	Arg	Lys	Lys	Arg	Arg
210	215	220													
Arg	Glu	Ser	Glu	Cys	Lys	Ala	Ala								
225	230														

<210> 16
<211> 696
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding TAT-EC SOD fusion protein

<400> 16

aggagaaga	gcggacagcg	acgaagatgg	acggggcgagg	actcggcgga	gcccaactct	60
gactcggcgg	agtggatccg	agacatgtac	gccaaggatca	cgaggatctg	gcaggaggtc	120
atgcagcggc	gggacgacga	cggcacgtc	cacgecgct	gccagggtgca	gccgtcgccc	180
acgctggacg	ccgcgcagcc	ccgggtgacc	ggcggtcgcc	tcttccggca	gcttgcgc	240
cgcgcaca	tcgacgcctt	cttcgccttg	gagggtttcc	cgaccgagcc	gaacagctcc	300
agccgcgc	tccacgtgca	ccagttcggg	gacctgagcc	agggtctgcga	gtccaccggg	360
ccccactaca	acccgctggc	cgtccgcac	ccgcagcacc	cgggcgactt	cgcaacttc	420
cgccgtccgc	acggcagcc	ctggaggta	cgccgcggcc	tggccgcctc	gctcgcggc	480
ccgcactcca	tcgtgggcgc	ggccgtggc	gtccacgtc	gcgaggacga	cctggccgc	540
ggcggcaacc	aggccagct	ggagaacggg	aacgcgggccc	ggccgcgtgc	ctgcgtcg	600
gtggcgtgt	cgccgcgcgc	gtctgggag	cgccaggcgc	gggagcactc	agagcgcaag	660
aagcggcggc	gcaaggcga	gtgcaaggcc	gcctga			696

<210> 17
<211> 657
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding TAT-delta HD/EC SOD fusion protein

<400> 17

aggagaaga	gcggacagcg	acgaagatgg	acggggcgagg	actcggcgga	gcccaactct	60
gactcggcgg	agtggatccg	agacatgtac	gccaaggatca	cgaggatctg	gcaggaggtc	120
atgcagcggc	gggacgacga	cggcacgtc	cacgecgct	gccagggtgca	gccgtcgccc	180
acgctggacg	ccgcgcagcc	ccgggtgacc	ggcggtcgcc	tcttccggca	gcttgcgc	240

cgcgccaagg	tcgacgcctt	cttcgcccgt	gagggctcc	cgaccgagcc	gaacagctcc	300
agccgcgcca	tccacgtca	ccagttcggg	gacctgagcc	agggctgca	gtccaccggg	360
ccccactaca	acccgctggc	cgtccgcac	ccgcagcac	cggcgactt	cgcaacttc	420
gcggtccgcg	acggcagcct	ctggaggtac	cgccggggcc	tggccgcctc	gctcgcgccc	480
ccgcactcca	tcgtgggccc	ggccgtggtc	gtccacgctg	gcgaggacga	cctggggccgc	540
ggcggcaacc	aggcagcgt	ggagaacggg	aacgcggggcc	ggccgctggc	ctgctgcgtg	600
gtgggcgtgt	gcccccccg	gctctgggag	cgccaggcgc	gggagcactc	agagtga	657

<210> 18
<211> 696
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 18						
cggcggcggc	ggcggcggcg	gccccgggtgg	acggggcagg	actcggcgga	gcccaactct	60
gactcggcgg	agtggatccg	agacatgtac	gccaaggatca	cgagatctg	gcaggaggatc	120
atgcagcggc	gggacgacga	cgccacgctc	cacgcccct	gccaggatca	gccgtcgccc	180
acgctggacg	ccgcgcagcc	ccgggtgacc	ggcgtcgatc	tcttccggca	gcttgcgc	240
cgcgccaagg	tcgacgcctt	cttcgcccgt	gagggcttcc	cgaccgagcc	gaacagctcc	300
agccgcgcca	tccacgtca	ccagttcggg	gacctgagcc	agggctgca	gtccaccggg	360
ccccactaca	acccgctggc	cgtccgcac	ccgcagcac	cggcgactt	cgcaacttc	420
gcggtccgcg	acggcagcct	ctggaggtac	cgccggggcc	tggccgcctc	gctcgcgccc	480
ccgcactcca	tcgtgggccc	ggccgtggtc	gtccacgctg	gcgaggacga	cctggggccgc	540

ggcggcaacc	aggcagcgt	ggagaacggg	aacgcggggcc	ggccgctggc	ctgctgcgtg	600
gtgggcgtgt	gcccccccg	gctctgggag	cgccaggcgc	gggagcactc	agagcgcaag	660
aagcggcggc	gcgagagcga	gtgcaaggcc	gcctga			696

<210> 19
<211> 699
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding R9-EC SOD fusion protein

<400> 19						
aagaagaaga	agaagaaga	gaagaagaag	tggacgggcg	aggactcgcc	ggagccaaac	60
tctgactcgg	cgaggatggat	ccgagacatg	tacgccaagg	tcacggagat	ctggcaggag	120
gtcatgcagc	ggcggggacga	cgacggcagc	ctccacggcc	cctggcaggt	gcagccgtcg	180
gccacgtgg	acgcccgcga	gccccgggtg	accggcgatc	tcccttccg	gcagcttgcg	240
ccccgcgcca	agctcgacgc	cttctcgcc	ctggagggtc	tcccgaccga	ggccaaacgc	300

tccagccgct ccatccacgt gcaccagtgc ggggacctga gccagggtcg cgagtccacc 360
ggggcccaact acaacccgtt ggccgtggc caccggcagc accccggcgta ctcggcaac 420
ttcgccgtcc gcgacggcagc cctctggagg taccggcccg gcctggccgc ctgcgtcg 480
ggcccgcaact ccatcggtgg ccggggccgtg gtcgtccacg ctggcgagga cgacctggc 540
cgccggcggca accaggccag cgtggagaac gggAACGCGG gccggcgct ggcctgctgc 600
gtggtgccggcg tgtgcgggcc cgggctctgg gagcgccagg cgcgggagca ctcagagcgc 660
aagaagcggc ggccgcgagag cgagtgcgaag gccgcctga 699

<210> 20
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 20
tatgaaagaa acctgggtggg aaacctgggtg gaccgaatgg ttcagccga aaaaaaaaacg 60
taaagtgc 68

<210> 21
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 21
tcgabcactt tacgtttttt ttccggctga gaccattcggttccaccagg 60
gtttcttcc 70

<210> 22
<211> 243
<212> PRT
<213> Artificial Sequence

<220>
<223> PEP1-EC SOD

<400> 22
Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
122 126 131 136

Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser
 141 146 151
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile
 156 161 166
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Gly Thr Leu His Ala
 171 176 181
 Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg
 186 191 196 201
 Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu
 206 211 216
 Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser
 221 226 231
 Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys
 236 241 246
 Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln
 251 256 261
 His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp
 266 271 276 281
 Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile
 286 291 296
 Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg
 301 - 306 311
 Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu
 316 321 326
 Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln
 331 336 341
 Ala Arg Glu His Ser Glu Arg Lys Lys Arg Arg Arg Glu Ser Glu Cys
 346 351 356 361
 Lys Ala Ala

<210> 23
 <211> 230
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> PEP1-deltaHD/EC SOD

<400> 23
 Lys Glu Thr Trp Trp Glu Thr Trp Trp Thr Glu Trp Ser Gln Pro Lys
 123 127 132 137
 Lys Lys Arg Lys Val Trp Thr Gly Glu Asp Ser Ala Glu Pro Asn Ser
 142 147 152
 Asp Ser Ala Glu Trp Ile Arg Asp Met Tyr Ala Lys Val Thr Glu Ile
 157 162 167
 Trp Gln Glu Val Met Gln Arg Arg Asp Asp Gly Thr Leu His Ala

172	177	182
Ala Cys Gln Val Gln Pro Ser Ala Thr Leu Asp Ala Ala Gln Pro Arg		
187	192	197
Val Thr Gly Val Val Leu Phe Arg Gln Leu Ala Pro Arg Ala Lys Leu		
207	212	217
Asp Ala Phe Phe Ala Leu Glu Gly Phe Pro Thr Glu Pro Asn Ser Ser		
222	227	232
Ser Arg Ala Ile His Val His Gln Phe Gly Asp Leu Ser Gln Gly Cys		
237	242	247

Glu Ser Thr Gly Pro His Tyr Asn Pro Leu Ala Val Pro His Pro Gln		
252	257	262
His Pro Gly Asp Phe Gly Asn Phe Ala Val Arg Asp Gly Ser Leu Trp		
267	272	277
Arg Tyr Arg Ala Gly Leu Ala Ala Ser Leu Ala Gly Pro His Ser Ile		
287	292	297
Val Gly Arg Ala Val Val Val His Ala Gly Glu Asp Asp Leu Gly Arg		
302	307	312
Gly Gly Asn Gln Ala Ser Val Glu Asn Gly Asn Ala Gly Arg Arg Leu		
317	322	327
Ala Cys Cys Val Val Gly Val Cys Gly Pro Gly Leu Trp Glu Arg Gln		
332	337	342
Ala Arg Glu His Ser Glu		
347	352	

<210> 24
<211> 737
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding PEP1-EC SOD fusion protein

<400> 24	
tatgaaagaa acctgggtgg aaacctgggt gaccgaatgg ttcagccga aaaaaaaacg	60
taaaactgctg gacggggcgcag gactcgccgg agcccaactc tgactcgccg gagttggatcc	120
gagacatgtt cgcacaggc acggagatct ggcaggaggat catgcacggg cgggacgacg	180
acggcacgct ccacgcccgc tgccagggtgc agccgtccgc cacgtggac gcccgcgc	240
cccggttgac cggcgtcgct ctctccggc agcttgcgcc cccgcacaag ctgcacgcct	300
tcttcgcctt ggagggtcttc cgcacggagc cgaacagctc cagccgcgc atccacgtgc	360
accagttcgg ggaccttgac cagggtcgac agtccacccgg gccccactac aaccggctgg	420
ccgtgcgcac cccgcacgc ac cccgcgtact tcggcaactt cgccgtccgc gacggcagcc	480
tctggaggta cccgcgcgc ctggccgcct cgctcgccgg cccgcactcc atcgtgggcc	540
ggggccgttgtt cgtccacgc ggcgaggacg acctggccgg cggccggcaac caggccagcg	600
tggagaacgg gaacgcgggc cggccggctgg cttgtcgctgtt ggtggccgtg tgccggcccg	660
ggctctggga gcgccaggcg cgggagact cagagcgcacaa gaagcggccgg cgccgagagcg	720
agtgcacggc cgcctga	737

<210> 25
<211> 695
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence encoding PEP1-deltaHD/EC SOD fusion protein

<400> 25
tatgaaagaa acctgggtgg aaacctgggtg gaccgaatgg ttcagccga aaaaaaaaacg 60
taaactgctg gacggggcag gactcgccgg agcccaactc tgactcgccg gagttggatcc 120
gagacatgtt cgcacagggtc acggagatct ggcaggaggat catgcagccg cgggacgacg 180
acggcacgtt ccacgcggcc tgccagggttc agccgtccgc cacgtggac gccgcgcagc 240
ccgggggtac cggcgctgtc ctctccggc agctgcgcc cccgcacaag ctcgacgcct 300
tcttcgcctt ggagggcttc cgcacccggc cgaacacgtc cagccgcgc atccacgttc 360
accagttcggtt ggaccttgacg cagggtcgac agtccacccgg gccccactac aaccgcgtgg 420
ccgtgcgcac cccgcacgtt cggcaactt cgcggccgc gacggcagcc 480
tctggaggta ccgcgcggcc ctggccgcct cgctcgccgg cccgcactcc atcgtggggcc 540
ggccgcgtgtt cgtccacgtc ggcgaggacg acctggccgg cggccgcac cagggcagcc 600
tggagaacgg gaacgcgggc cggcggttgtt cctgcgtgtt ggtggggctgt tgccggcccg 660
ggctctggga ggcgcaggcg cgggagact cagag 695

<210> 26
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 26
ttgtctctaa tagagggtc 19

<210> 27
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 27

tcaaggctgt ctatcttct

19

<210> 28
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 28
atctacagct cctttggct t

21

<210> 29
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 29
atctacagct cctttggctt

20

<210> 30
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 30
aaccctcaga gccaccccta

20

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 31
gtgcatacaa agcaaactgc 20

<210> 32
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 32
catttccag gagcgagacc 20

<210> 33
<211> 20
<212> DNA
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<220>
<223> primer

<400> 33
tccaccaccc tgttgctgta 20